DERWENT-ACC-NO: 1995-167375
DERWENT-WEEK: 199522

TITLE: Polyester resin compsn. used in mfr. of lamp reflector - comprises poly:cyclo:hexylene-di:methylene terephthalate-type resin, polyetheramide and/or polyetherester, and organic phosphite or phosphonite

PATENT-ASSIGNEE: TORAY IND INC[TORA]

PRIORITY-DATA: 1993JP-0237553 (September 24, 1993)

PATENT-FAMILY:

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APPLICATION-DATA:

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ABSTRACTED-PUB-NO: JP07090163A

BASIC-ABSTRACT: Polyester resin compsn. consists of (A) 100 pts.wt. of polycyclohexylene-d imethylene terephthalate-type resin, (B) 0.05-20 pts.wt. of polyetheramide and/or polyetherester and (c) 0.05-4 pts.wt. of organic phosphite of formula (I) or phosphonite cpds. of formula (II) having at least one P-O bond linked to 6-30C aromatic gp.. In formula (I) at least one of R1, R2 and R3 = 6-30C aromatic gp. and the other two = H or 1-30C aliphatic gp. In formula (II), at least one of R4, R5 and R6 = 6-30C aromatic gp. and the other two = H or 1-30C aliphatic gp. (A) contains at least 80 mol%

repeat unit
consisting of terephthalic acid residue and
1,4-cyclohexanedimethanol residue
bonded together. Lamp reflector is obtd. by coating a primer on the surface of
a moulding consisting of the polyester resin and metallising the primer or by
directly metallising the surface of a moulding consisting of the polyester
resin without coating a primer.

ADVANTAGE - The polyester resin compsn. has good thermal resistance, surface
properties, coatability and adhesiveness.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:
POLYESTER RESIN COMPOSITION MANUFACTURE LAMP REFLECT COMPRISE POLY CYCLO
HEXYLENE DI METHYLENE TEREPHTHALATE TYPE RESIN POLYETHERAMIDE POLYESTERETHER
ORGANIC PHOSPHITE PHOSPHONITE

DERWENT-CLASS: A23 A82 E11 G02 M13

CPI-CODES: A05-E04B; A05-E09; A05-H01A; A05-J01B; A07-A03; A08-A04; A11-C04B1;
A12-L03; E05-G02; E05-G08; G02-A05E; M13-H05;

CHEMICAL-CODES:
Chemical Indexing M3 *01*
Fragmentation Code
B515 B712 B713 B720 B741 B760 B813 B831 G010 G015
G020 G021 G040 G100 G221 M210 M211 M212 M213 M214
M215 M216 M220 M221 M222 M223 M224 M225 M226 M231
M232 M233 M240 M250 M272 M280 M281 M282 M320 M411
M510 M520 M531 M540 M781 M903 M904 Q130 Q331 Q332
Q465 Q622
Markush Compounds
199522-E0101-U

ENHANCED-POLYMER-INDEXING:
Polymer Index [1.1]
017 ; E21 E00 D01 D11 D10 D14 D13 D19 D18 D32 D50 D63 D93 F41 ;
H0293 ; P0839*R F41 D01 D63 ; S9999 S1434
Polymer Index [1.2]

017 ; P0635*R F70 D01 ; P0964*R F34 D01 ; H0260 ; S9999 S1434
Polymer Index [1.3]
017 ; P0953 P0839 P0964 H0260 F34 F41 D01 D63 ; S9999 S1434
Polymer Index [1.4]
017 ; R00770 G1025 G0997 D01 D11 D10 D14 D13 D31 D50 D88 F28 F26
; R00702 G1343 G1310 D01 D19 D18 D31 D50 D60 D88 F37 F35 E00 E21
; H0022 H0011 ; H0293 ; P0839*R F41 D01 D63 ; S9999 S1434
Polymer Index [1.5]
017 ; ND01 ; ND04 ; Q9999 Q8311 Q8264 ; N9999 N7090 N7034 N7023
; N9999 N7103*R N7034 N7023 ; B9999 B5414*R B5403 B5276 ; B9999
B5425 B5414 B5403 B5276 ; K9676*R ; K9552 K9483 ; K9483*R ; B9999
B4682 B4568 ; B9999 B5276*R ; B9999 B5301 B5298 B5276 ; K9745*R
Polymer Index [1.6]
017 ; D01 D11 D10 D18*R D50 D63 F52 ; A999 A511 A486
Polymer Index [1.7]
017 ; D01 D11 D10 D18*R D63 O* 6A P* 5A ; A999 A511 A486

SECONDARY-ACC-NO:
CPI Secondary Accession Numbers: C1995-077594

* NOTICES *

DETAILED DESCRIPTION

[Detailed description]
[0001]
[Field of the Invention] this invention relates to the polyester resin constituent with good thermal resistance, front-face nature, paint nature, and adhesive property, and the lamp reflector which reaches and is obtained.
[0002]
[Prior art] In recent years, adoption of the thermosetting resin (it is written as FRP below) strengthened with the glass fiber etc. instead of the metallic material as a material for lamp reflector - for automobiles is increasing rapidly. Although FRP has the property which was excellent considering thermal resistance, rigidity, and dimensional stability as start, in case molding cycles are a ******** and molding, a monomer volatilizes at the time of the thing which a burr generates, and molding, and the trouble of worsening a work environment is held. Therefore, the development of the lamp reflector using the thermoplastics without such a trouble is desired.
[0003] From the former, the development of the grade for lamp reflectors has been considered using the polyethylene terephthalate (PET) and polybutylene terephthalate (PBT) which have been used as an injection-molding material. For example, the constituent for lamp reflectors which used an impalpable-powder reinforcement (Provisional-Publication-No. 133234 [61 to] official report), titanium oxide (utility-model public notice official report of No. 16561 [Showa 61 to]), and the magnesium oxide (Provisional-Publication-No. 311553 [two to] official report) for PBT or PET as a reinforcement is reported. However, when these constituents were applied to lamp reflector - used near the strong light source, it was exposed to high temperature, and it not only deforms near bulb electrode-holder -, but the filler came up and there was a problem that front-face nature was bad for a ** reason, and sufficient ****** was not obtained.
[0004] Although the technique (Provisional Publication No. 59-149951) of adding the technique (Provisional Publication No. 53-14754) and the diene system polymer which add epoxy acrylate as technique of improving the paint nature of polyester, an epoxy compound, etc., the technique (common [1-203433]) of adding a phenoxy compound, etc. were proposed, the effect of paint nature enhancement was inadequate in the case where it applies to PCT.
[0005]
[Object of the Invention] The adhesive property with sufficient metallic-reflection side for this invention persons to use as a material for lamp reflector - etc., And the result to which the front-face nature of the metallic-reflection side where an adhesive property is good and was acquired when a primer layer was prepared between a metallic-reflection side and mold goods examined the good polyester resin constituent, Little addition of the specific polymer was carried out at PCT resin, it found out that the resin constituent which attains the desired end by adding a specific ****** system compound further was obtained, and this invention was reached.
[0006]
[The means for solving a technical problem] Namely, the polycyclohexylene-dimethylene-terephthalate system polyester resin 100 weight section with which (a) terephthal acid residue and 1 and 4-cyclohexane dimethanol residue combined this invention and among which a unit occupies 80 mol % in a polymer repeatedly, (b) -- a polyether amide and/or polyether ester 0.05, - 20 weight section -- and (c) Organic phosphite which at least one P-O combination has combined with the aromatic machine of carbon numbers 6-30, Or the polyester resin constituent characterized by consisting a phospho night compound of the 0.05 - 4 weight section and the lamp reflector which consists of this constituent further and comes to prepare a metallic-reflection side in a front face are offered.
[0007] The polycyclohexylene-dimethylene-terephthalate system polyester resin (it is called PCT system polyester for short below) used by this invention is a thing which the terephthal acid residue and 1 and 4-cyclohexane dimethanol residue combined and to which a unit occupies 80 mol % in a polymer repeatedly.
[0008] Although especially the manufacture technique of PCT system polyester in this invention is not limited, the method of carrying out the polycondensation of a terephthalic acid or its low-grade alkyl ester, and the 1 and 4-cyclohexane dimethanol, and obtaining them, for example under presence of catalysts, such as an organic titanium compound, or un-existing, is mentioned. The conditions indicated by for example, the U.S. patent official report of No. 2,901,466 as polymerization conditions may be applied.
[0009] It is a domain not more than 10 mol % preferably. the acid component or diol component of PCT system polyester -- less than [20 mol %] -- An isophthalic acid, an ortho phthalic acid, 2, 6-naphthalene dicarboxylic acid, 2, 7-naphthalene dicarboxylic acid, 1, 5-naphthalene dicarboxylic acid, A methyl terephthalic-acid, 4, and 4'-biphenyl dicarboxylic-acid, 2, and

2'-biphenyl dicarboxylic acid, 1, 2-screw (4-carboxy phenoxy)-ethane, a succinic acid, an adipic acid, A suberic acid, an azelaic acid, a sebacic acid, a dodecane ****** acid, a ****** decane dicarboxylic acid, Other dicarboxylic acid or ethylene glycol, such as dimer-acid and 1, and 4-cyclohexane dicarboxylic acid, A propylene glycol, 1,5-pentanediol, 1, 6-hexandiol, What was replaced by other diols, such as 1, 8-octanediol, 1, 10-Deccan diol, 1, 3-cyclohexane dimethanol, 1, and 2-cyclohexane dimethanol and 2, and 2-screw (2'-hydroxy ******** phenyl) propane, can be used.

[0010] It is desirable that **** / transformer ratio (mole ratio) which is the proportion of cis-structure and a trans configuration are in the domain of 60 / 40 - 10/90, they are 50 / 50 - 15/85 more preferably, and the cyclohexane rings which are 1 of PCT system polyester used by this invention and a part of 4-cyclohexane dimethanol residue are 40 / 60 - 25/75 still preferably.

[0011] The intrinsic viscosity when measuring o-****** phenol solution at 25 degrees C is desirable, and PCT system polyester used by this invention has the more preferably desirable thing of 0.5-1.0dl/g 0.5 to 2.0 dl/g.

[0012] When the intrinsic viscosity of PCT system polyester is 0.4dls/under g, a mechanical property is low, on the other hand, there is an inclination that a moldability becomes poor when 2.0dL/g is exceeded, and neither is desirable.

[0013] Moreover, as for the amount of terminal carboxyl groups of PCT system polyester, it is still desirably [especially] desirable that they are below 15 equivalents / 106 g-polymer below 30 equivalents / 106 g-polymer below 100 equivalents / 106g-polymer.

[0014] The amount of terminal carboxyl groups of PCT system polyester can be measured using the technique of for example, Anal.Chem. and H.A.Pohl indicated by 26.1614-1616 (1954).

[0015] The polyether amide which is one of the components (B) of this invention is a block copolymer which consists of a soft segment which makes a subject the hard segment which makes a polyamide component a subject, and a polyoxyalkylene component, and both segments contain what is connected by amide combination or ester combination.

[0016] As an example of the compound which is usually guided from the salt of an amino carboxylic acid, a lactam or a diamine, and a dicarboxylic acid, and serves as these raw materials, a **** polyamide component here A 4-amino butanoic acid, a 5-amino pentanoic acid, a 6-amino hexanoic acid, A 7-amino oenanthic acid, a 8-amino octanoic acid, a 9-amino nonoic acid, A 10-amino decanoic acid, a 11-amino undecanoic acid, 12-amino dodecanoic acid, Amino carboxylic acids, such as a 13-amino tridecane acid and a 14-amino tetradecanoic acid, Lactams, such as a caprolactam, a ******** lactam, capryl, and a ****** lactam, And ethylenediamine, a propylenediamine, a tetramethylenediamine, A pentamethylene diamine, a hexamethylenediamine, a heptamethylene diamine, An octamethylene diamine, a nonamethylene diamine, a deca methylene diamine, An undecamethylene diamine, a dodeca methylene diamine, a trideca methylene diamine, A tetrapod deca methylene diamine, 2 and 2, 4-/4, a 4-trimethyl hexamethylenediamine, [2 and 4] 1, 3-/1, 4-screw (aminomethyl) cyclohexane, a meta-xylylene diamine, A para xylylene diamine, a screw (p-amino cyclohexyl) propane, The aliphatic series chosen out of screw (p-amino cyclohexyl) methane etc., An alicycle group, an aromatic diamine and an adipic acid, a suberic acid, a sebacic acid, an azelaic acid, A dodecane ****** acid, 1, 3-/1, 4-cyclohexane dicarboxylic acid, The aliphatic series and the alicycle group who are chosen out of an isophthalic acid, a terephthalic acid, an ortho phthalic acid, etc., the salt which consists of an aromatic dicarboxylic acid can be mentioned, and these can be used in the type of independent or two or more sorts of mixture. Among these, a caprolactam, a ****** lactam, a 11-amino undecanoic acid, 12-amino dodecanoic acid, a hexamethylenediamine-adipate, and a hexamethylenediamine-sebacic-acid salt are used preferably.

[0017] As an example of the polyoxyalkylene component which is another component which constitutes a polyether amide, a polyoxyethylene, polyoxypropylene, polyoxy tetramethylen, polyoxypentamethylene, a polyoxy hexamethylene, a polyoxyethylene / propylene, a polyoxyethylene/tetramethylen, a polyoxyethylene/styrene, etc. are mentioned. Also among these, a polyoxyethylene, polyoxypropylene, and polyoxy tetramethylen are used especially preferably.

[0018] There is especially no limit in the manufacturing method of such a polyether amide. How to carry out the melting polymerization of the polyamide plasticity monomer which contains in the terminal the dicarboxylic acid or diamine of an amount which forms the polyoxyalkylene and the above-mentioned polyoxyalkylene terminal which have an amino group or a carboxyl group, and a salt (for example, Japanese Patent Publication No. 2686 [59 to] official report), Or a little dicarboxylic acid is used as a raw material a polyalkylene glycol, a polyamide plasticity monomer, and if needed. How (for example, Provisional-Publication-No. 47798 [54 to] official report) to make a both-ends carboxylation polyamide prepolymer by the reaction of a polyamide plasticity monomer and a dicarboxylic acid first, and to make this carry out the bottom melting reaction of a vacuum of the polyalkylene glucohol, After teaching the aforementioned polyalkylene glycol, an amide plasticity monomer, and a dicarboxylic acid simultaneously to a reaction vessel and mixing, conventionally well-known polymerization methods, such as the technique (for example, Provisional-Publication-No. 119997 [53 to] official report) of performing the bottom melting polymerization of a vacuum, are employable suitably.

[0019] As an example of the dicarboxylic acid used if needed in the case of a manufacture of these polyethers amide A terephthalic acid, an isophthalic acid, an ortho phthalic acid, naphthalene -2, 6-dicarboxylic acid, Naphthalene -2, 7-dicarboxylic acid, the diphenyl -4, a 4'-dicarboxylic acid, Aromatic dicarboxylic acids, such as difenoxicarboxylic acid and 5-sulfoisophtharate sodium, 1, 4-cyclohexane dicarboxylic-acid, 1, and 2-cyclohexane dicarboxylic acid and dicyclohexyl - An alicycle group dicarboxylic acid and oxalic acid, such as a 4 and 4'-dicarboxylic acid, A malonic acid, a succinic acid, a glutaric acid, an adipic acid, a ********** acid, a ********** acid, A ******** acid, a ********** acid, a tetrapod ******** acid, a hexa ******** acid, Aliphatic dicarboxylic acids, such as a ********** acid and a ray ******** acid, etc. are mentioned, and especially, a terephthalic acid, an isophthalic acid, 1, 4-cyclohexane dicarboxylic acid, an adipic acid, a ******** acid, a ********** acid, a ray ******** acid, etc. are fond, and are used.

[0020] The number average molecular weight of a polyoxyalkylene component has the good domain of 200-6000, and especially

the domain of 250-4000 is chosen preferably.
[0021] The rate for which it accounts in the polyether amide of a polyoxyalkylene component (it is a polyalkylene ether ester component when using a dicarboxylic acid at the time of a polymerization) has 95 - 10 desirable % of the weight, and it is 85 - 50 % of the weight more preferably.
[0022] The polyether ester which is another component which can be used as a constituent (B) of this invention is a block copolymer which consists of a soft segment which makes a subject the hard segment which makes a polyester component a subject, and a polyoxyalkylene component.
[0023] A **** polyester component is guided here from a dicarboxylic acid (or the ester plasticity derivative) and a diol (or the ester plasticity derivative).
[0024] As an example of such a dicarboxylic acid (or the ester plasticity derivative) A terephthalic acid, an isophthalic acid, an ortho phthalic acid, 1, 5-naphthalene dicarboxylic acid, 2, 5-****** range carboxylic acid, 2, 6-naphthalene dicarboxylic acid, A - biphenyl dicarboxylic-acid, and 2 and 2 '3, 3'-biphenyl dicarboxylic acid, A - biphenyl dicarboxylic-acid, and 4 and 4 '4, 4'-diphenylmethane dicarboxylic acid, A - diphenyl sulfone dicarboxylic-acid, and 4 and 4 '4, 4'-diphenyl isopropylidene dicarboxylic acid, 1, 2-screw (phenoxy) ethane -4, a 4'-dicarboxylic acid, 2, 5-anthracene dicarboxylic acid, A 2, 6-anthracene dicarboxylic-acid, 4, and 4'-p-terphenylene dicarboxylic acid, Aromatic dicarboxylic acids, such as 2, 5-pyridine dicarboxylic acid, and 5-sulfoisophtharate, A succinic acid, oxalic acid, an adipic acid, an azelaic acid, a dodecane ****** acid, Alicycle group dicarboxylic acids, such as aliphatic dicarboxylic acids, such as a sebacic acid and a dimer acid, and a cyclohexane dicarboxylic acid, And the ester plasticity derivative of these dicarboxylic acids, for example, low-grade alkyl ester, aryl ester, a carbonate, an acid halide, an anhydride, etc. are mentioned, and a terephthalic acid (and the ester plasticity derivative) is especially used preferably also in this. In addition, two or more sorts may be mixed and used for these dicarboxylic acids (or the ester plasticity derivative). For example, the mixture of a terephthalic acid (and the ester plasticity derivative) and a little isophthalic acid (and the ester plasticity derivative) is used preferably. Moreover, with a dicarboxylic acid, a polycarboxylic acid can also be used because of hyperviscosity-izing etc., and trimellitic acid, a trimesic acid, pyromellitic acid, a benzophenone tetrapod carboxylic acid, a butane tetrapod carboxylic acid (and these ester plasticity derivatives), etc. can be mentioned as such a polycarboxylic acid.
[0025] next, as an example of the diol (or the ester plasticity derivative) which is another component which constitutes a polyester component Ethylene glycol, a propylene glycol, a tetramethylene glycol,

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